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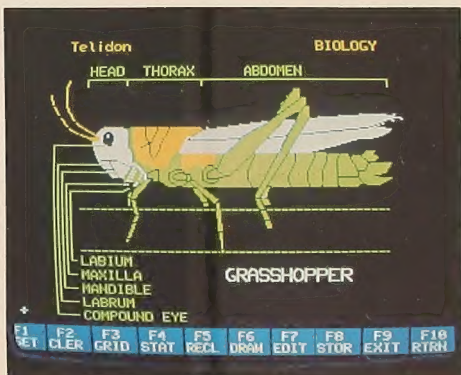
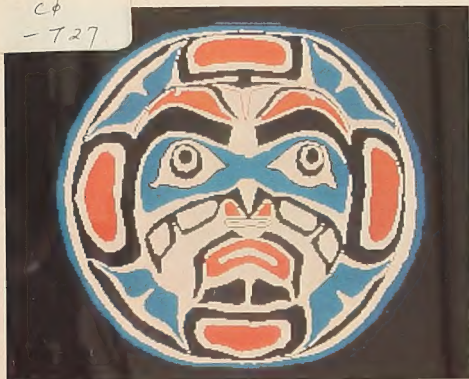
TELIDON TODAY

The videotex system of tomorrow — available today

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Telidon's superior graphic capability — its high resolution images, range of colors and ease of data entry — makes it the best choice for information providers.

Videotex or two-way TV technology is among the most promising offspring of the marriage between computer and telecommunications technologies which will transform the information universe in the 1980s. Already, nearly every major industrialized country is embarking on its own programs to develop videotex, a new technology which may render computerized information-retrieval and a host of other new services omnipresent realities in home and office by the end of the decade.

Of the many systems now in existence, Telidon is the most advanced. First demonstrated for the public in August 1978, this new videotex system offers unique and unprecedented advantages to information providers — the corporations and individuals who put information into videotex data banks where it can be accessed by residential or business users.

Like other videotex systems, Telidon consists of a slightly modified television set or display monitor, an interface decoder device, a telecommunications system and a central computer into which the electronic publisher places his information.

Here the similarities end. Telidon has a micro-computer in all its terminals and exploits fully the most recent advances in computer-graphics and telecommunications technologies. It is uniquely fitted to convert the simple television set into a powerful information tool — a means of obtaining, with a push of the button, a vast range of written, graphic or photographic information.

The electronic publisher or information provider will also find it easier and cheaper to get information into the Telidon data base. At the present time, an operator using a Telidon IP (information provider) terminal can create a page of text in about five minutes. He or she can edit that text without difficulty, which also means there is no need to recreate an entire page if the information requires updating. These capabilities substantially cut the operator's time on a specific task, resulting in a significant cost saving.

The Telidon system can also automatically generate information — a capability which has already been demonstrated. The emergence of

computerized typesetting in newspapers, bibliographic data banks in libraries, word processing, computer generation of weather maps and other digital information systems, has meant an enormous growth in the quantity of information held in computerized data banks. The task of automatically converting most of this information into pages in a Telidon data bank is relatively easy, given that Telidon codes are compatible with those used in most computerized information systems.

A picture built from its geometric elements

However, it is Telidon's graphic capabilities which render it truly superior to other videotex technologies. The operator of a Telidon IP terminal need not build up a picture by laboriously picking out the co-ordinates in a mosaic grid of each square affected by the picture in question. Instead, by pushing a few buttons, he or she can use the natural language of drawing to build up a picture from its basic geometric elements — point, line, arc, polygon and rectangle. These Picture Description Instructions (PDIs) or computer codes, can describe almost any graphic image. Because less work is required to create an image, PDIs can save an IP terminal operator a lot of time, and his employer a lot of money.

Telidon systems are remarkably efficient, requiring considerably less storage and transmission capacity for information than other systems. A simple picture may require, on the average, less than 500 bytes and efficiency improves as resolution of the displayed output increases.

The degree and range of resolution provided by Telidon are also unmatched. PDIs are suitable for displaying a theoretically limitless number of picture elements. In fact, the only limits reside in the display technology and the number of position elements in the data base. At present, the system can use the maximum display capability of contemporary TV receivers, word processing equipment or high resolution graphics terminals. When display technology improves, even better pictures could be achieved without modifying the data bases.

Conversely, the same PDIs and the same data base are also quite capable of offering the lower resolutions appropriate to TV receivers able to display far fewer picture elements. The Telidon system is, in short, adaptable to virtually any type of display monitor, however low or high its resolution capabilities.

Electronic publishers are now using seven different colors in creating Telidon display pages, but can use many more shades if the application demands it. As with resolution, the present limits reside in the design of the terminal decoder, not the PDIs. In the future, the number of

continued on page 2

Components	2
Data base	2
Field trials	345
Information providers	6
New features	7
Standards	2
Transmission mode	8

Enquiries may be addressed to the nearest Canadian Embassy, High Commission or Consulate or, in Canada, to the Telidon Program, Department of Communications, 300 Slater Street, Ottawa, Ontario K1A 0C8.

continued from page 1

shades and colors available could be virtually limitless. Again, however, the system is adaptable to the color display capabilities of the user's TV monitor. For example, a black and white TV can display Telidon signals, even if these were transmitted in living color.

Adaptable to most types of display monitor

Another feature of Telidon is that information providers are not limited to displaying material line by line, from left to right on the screen. The operator is completely free to choose the order in which the information is displayed. For instance, a graphic display could appear progressively on the screen in the order which is most illustrative of its meaning. Or Arabic words could appear from right to left — that is, in the order in which they would be read.

Moreover, there is almost no limit to the complexity of Telidon graphic displays. The system permits an unlimited number of graphic overlays on the screen by the operator.

If an image cannot be described in geometric terms, Telidon employs a bit mode in which each picture element of the display is described. The result is a photographic or facsimile-like image of the original. A human face or a signature can be accurately portrayed in this mode.

Telidon also allows an electronic publisher to create and display motion on the screen. An educational TV network and Canada's National Film Board have both created with present PDIs ingenious simulated animation sequences on Telidon screens. In the near future, a much improved animation capability will become available.

Compatible with virtually every mode of transmission

The Telidon system is especially well suited to competing in the computer communications marketplace of the 1980s.

For example, it is compatible with virtually every mode of transmission in use now or in the foreseeable future. The system was designed to operate over telephone lines, cable TV, optical fibres, off-air broadcasting, satellite, packet-switching networks and microwave, as well as various combinations of these.

Telidon is also sufficiently versatile to meet the needs of diverse groups of subscribers. Business users may require sophisticated terminals which offer high resolution, a full range of colors and other features. The home subscriber will likely prefer a much more modest package at a smaller price. Manufacturers of Telidon hardware will soon be offering a wide range of Telidon terminals at various prices and with features appropriate to the most sophisticated business need or the humblest home application. Even the least expensive of these terminals will, however, be able to access any page in public Telidon data bases.

Telidon is an evolving technology, but future developments will not render obsolete existing Telidon software, terminal devices or the structure of its data bases. The Picture Description Instructions at its core form an extensible code and permit the introduction of any number of additional features. Some of these will soon be available. Other more advanced features are in the latter stages of development, while yet others are experimental or only concepts in the minds of Telidon's creators.

Telidon will also remain uniquely adaptable to any foreseeable change in computer, transmission, data base management and display technologies. This is because, in the Telidon system, the videotext terminal is almost entirely independent of the transmission mode and the data base. Information storage, delivery and receiving systems depend very little on each other. As a result, a change in any of these technologies will not render the system obsolete or require an expensive reconstitution of the data base.

Telidon, in short, is proof against future shock. It is the videotext system of tomorrow — available today.

Videotex standards essential

The widespread acceptance of national and international standards for videotex systems is essential for the fulfillment of the potential inherent in this new technology.

Such standards should be as inclusive as possible to permit competition between different videotex systems, but not so broad as to preclude compatibility between them. Equally important, such standards should encourage vigorous competition among information providers.

In the absence of widely accepted standards, it is difficult to see how electronic publishers will find large enough markets to justify their original investments. Without them, data bases prepared for one videotex system may not be compatible with another. Electronic publishers may be faced with the alternative of expensively converting their data bases to other codes and formats, or simply forgoing expansion.

Similar difficulties could well beset the manufacturers of videotex hardware. The large initial investments in videotex research and development may never be amortized if national markets for hardware become too fragmented, as would occur in the absence of widely accepted standards. The result could be equipment shortages and even bankruptcies — a catastrophe for information providers who would have spent money creating data bases for a failing or defunct videotex system.

A multiplicity of incompatible standards would also severely restrict the free flow of information, both between and within nations. Indeed, it might undermine the major appeal of videotex to potential business and residential users — the possibility of accessing a wide variety of data banks, both national and international.

The merits of Telidon have been widely recognized in the international community. The CCITT (Consultative Committee on International Telegraphy and Telephony), a branch of the International Telecommunication Union, has, in its deliberations on standards for videotex, placed Telidon on an equal footing with other earlier developed videotex systems.

Data base: flexible and future proofed

The structure of the Telidon data base is unique and promises an unmatched flexibility for both subscribers and information providers in accessing and displaying information.

Users now employ tree logic to access information in the data base. In the future, users with the appropriate terminal configurations will be able to use tree logic, keyword search, other search techniques or combinations of these.

Moreover, the Telidon data base is completely independent of any particular display technology. The definition of a page of information is not tied in any way to existing display technology. For this reason, information providers will not need to restructure their information if a new display technology emerges.

By the same token, they will also have unprecedented flexibility in creating information. For example, each information file need not be a page in length with a fixed upper limit for numbers of lines and characters, as with other videotex systems in which the structure of the data base is tied to existing display technologies. With Telidon, a single information file could contain an entire book, which would be rolled up the screen page after page at a speed controlled by the reader.

Similarly, there is no theoretical limit on the resolution, coloring, or ordering of information in files within the Telidon data base.

The only practical limits are those of existing hardware, but even those constraints may vanish as the technology evolves.

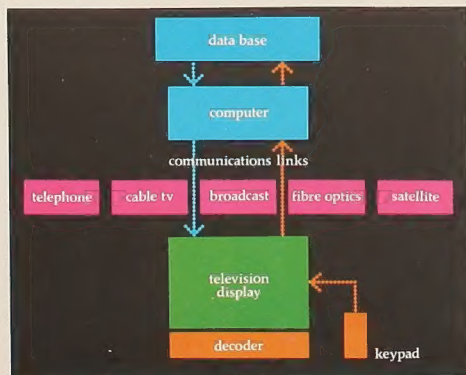
Telidon: the system described

The basic Telidon system consists of a keypad, a TV display unit, a decoder including display generator, a telecommunications link and a central computer containing a Telidon data base.

Once in touch with the data base, the user can access information in the data base — or, in theory, in any number of other Telidon data bases to which

he or she is connected — simply by pushing a button.

The decoder converts the TV display unit — an ordinary or slightly modified TV set — into a videotext display unit. Essentially, it receives the communication codes from the central data bank and computer, and then converts them into a form suitable for display on the screen.



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Out of the lab, into the home

Telidon has already moved from the laboratory into the field. The first field trial has already begun and many more will commence during 1980 and 1981 to test Telidon in a wide variety of situations.

These tests will assess the technical features of the Telidon system, its appeal in a large number of different markets, its many applications and its compatibility with a broad range of different telecommunications systems.

Sponsors of these field trials include Canada's largest educational TV network, its biggest telephone companies, innovative cable companies and federal and provincial governments.

About 200 information providers, ranging in size from Canada's largest newspapers to small firms and individuals, have expressed an interest in providing information in Telidon format for the trials. Many are already preparing information or putting the finishing touches on their plans for participation in the trials.

Since its public unveiling in August 1978, there have been innumerable demonstrations of Telidon technology — including one demonstration using the transatlantic telephone cable and one using a satellite relay to transmit Telidon signals from Canada to Switzerland and Canada to Australia, respectively.

The latter was particularly significant because it employed the Canadian-American Hermes satellite (a prototype for the direct broadcast satellite of the future), to relay Telidon signals to an earth terminal small enough to fit on a residential rooftop. Never before had such a telecommunications link been used to transmit videotex signals.



During 1980 and 1981, there will be over 2,000 terminals in use for Telidon field trials in 21 cities, towns and suburbs across Canada.

Educational TV uses broadcast, satellite

The largest educational TV network in Canada embarked in January 1980 on the first Telidon field trial ever conducted.

The publicly owned Ontario Educational Communications Authority (OECA) and its educational TV network, TV Ontario, is investigating the technical and operating features of Telidon in the broadcast mode, as well as exploring possible educational applications for the new system — including computer-assisted and managed learning. Users will be asked to respond to exhaustive questionnaires on the educational usefulness of Telidon.

Telidon data are now being transmitted in the vertical blanking interval of the TV Ontario broadcast signal and will soon be transmitted via a direct broadcast satellite link to remote areas. In this teletext mode, the viewer, by pushing a button on a keypad, will be able to select pages of information from a file containing several hundred pages. These include news flashes, weather bulletins, stock market reports, tourist information and educational features and games. Terminals capable of electronically grabbing a page of information for display on a TV screen will be located in some homes, schools, colleges, libraries and other settings.

In the Colarbrae Library, Toronto-area students access Telidon broadcast by TV Ontario.

The OECA will also be conducting interactive field trials in which a telephone link to a host computer will provide access to hundreds of thousands of pages — many times the number available via the broadcast link.

The OECA foresees a host of educational applications for Telidon. The system's advanced graphic capabilities render possible the electronic transmission of mathematical, scientific and technical illustrations; comparative charts in economics, demographic data and statistics; maps and profiles in economics and geography; cartoons for social studies and basic literacy; as well as signs and symbols for the deaf and other users.

Soon TV Ontario will be using Telidon to supply schedules, program notes and subtitles for conventional educational broadcasts. Telidon will be used to place captions on the screen during educational programs for the benefit of the deaf and second language groups.

However, the capabilities of Telidon as an interactive medium are what most excite OECA officials. The Authority is asking other educational institutions to prepare computer-assisted learning (CAL) sequences — educational quizzes, games, and so on — and computer-managed learning sequences in which a distant teacher can help students at home to assess their mastery of units of curriculum. Interactive dialogues between stu-

dents and teachers will also be explored.

The OECA feels Telidon might replace or provide an alternative to many of the printing activities carried out by educational institutions. It will examine the efficiency of publishing over Telidon specialized educational material which would be too costly for conventional print-publishing.

OECA officials are also looking at the possibility of Telidon providing a 24-hour information search-and-retrieval capability to students, who would thereby be freed from the restrictions of externally imposed schedules. In addition, Telidon could serve to disseminate widely the information in existing computerized data bases which can now often be accessed by the public at only a few large or specialized libraries.

For more information, please contact the Telidon Project, Ontario Educational Communications Authority, P.O. Box 200, Station "Q", Toronto, Ontario, Canada M4T 2T1. Telephone: (416) 484-2930.

Telephones (ACT) plans to extend the Telidon service to some 18,000 homes and businesses.

As well as carrying such Telidon information services as continually updated news, sports, weather, consumer information, yellow pages listings, entertainment guides, real estate listings and so on, the new system will also offer automatic fire and burglar alarm reporting, an emergency alert for police, fire and medical services, and remote utility meter-reading.

For more information, please contact Project Vidon, Alberta Government Telephones, Floor 30F, 10020-100 Street, Edmonton, Alberta, Canada T5J 0N5. Telephone: (403) 425-3688.

Telidon goes West

The telephone company in oil-rich Alberta will in late 1980 inaugurate Project Vidon — a Telidon field trial employing 150 user terminals.

If the trial taking place in Calgary over a dedicated wire pair is successful, Alberta Government

Canada's second largest telephone company, the British Columbia Telephone Company, plans to conduct a wide variety of Telidon field trials on the West Coast during 1980 to 1983. More details on the trials will become available as planning proceeds.

For more information, please contact the British Columbia Telephone Company, 3777 Kingsway, Burnaby, B.C., Canada V5H 3Z7. Telephone: (604) 432-2151.



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TELIDON APPLICATIONS

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First step towards "home of the future"

In late 1980, the New Brunswick Telephone Company will embark on Project Mercury — an \$800 000 (Cdn), two-year Telidon field trial. According to company officials, it could "revolutionize future communications" in the Atlantic province.

Billed as the first step towards the "Home of the Future", the project will involve placing user terminals on a rotating basis in 75 homes and a few businesses. Interactive visual communications services will be carried over an ordinary local telephone line, along with such services as computerized medical and police signalling, automatic fire and burglar alarm monitoring, remote utility meter reading and a home maintenance service.

"The establishment of computer links to the home opens the potential for many commercial service opportunities," says N.B. Tel vice-president for operations, W.H.R. Smith. "As yet, little is known about the specific form these services might take or even what businesses or institutions will play a role in providing them. Project Mercury will provide the opportunity to experiment with the development of services that will be valuable to our customers."

Among the information services to be supplied over Telidon are continually updated news, sports, weather information, classified ads, yellow pages listings, and real estate and entertainment listings.

Users may also be able to teleshop, as well as receive (all in an interactive mode) university courses, tourist information, airline schedules, restaurant listings and a host of games and puzzles.

The suburb chosen for the trial has a wide cross-section of homes and services. This fairly compact area contains a rich mix of small businesses, high and middle income single-family homes, multi-family dwellings and apartment buildings. Nearby educational and medical facilities may play a key role in the project, and a large shopping centre may participate in the teleshopping experiment.

For more information, please contact Project Mercury, the Project Manager, Advanced Services, New Brunswick Telephone Company, P.O. Box 1430, St. John, New Brunswick, Canada E2L 4K2. Telephone: (506) 693-6719.

Norpak Ltd. MK3 Telidon terminal is offered with modem interface and/or teletext interface for broadcast or cable.



At the International Telecommunication Union exhibit, Telecom 79, Telidon graphics are created on the spot at the Canadian pavilion.

1.2 m rooftop antenna from SED Systems Inc. will pick up TV Ontario Telidon signals.



Courtesy: Art Co.

Personal service makes a comeback

Early in 1980, Telidon resurfaced in a Winnipeg suburb a modern version of the gossipy information service supplied by local telephone operators in the 19th century.

The field trial is sponsored by the Manitoba Telephone System (MTS) and is named Project Ida after Ida Cates who, in 1882, became the first woman telephone operator in the prairie province.

By the end of 1980, 150 terminals will be placed in Manitoba homes, and Telidon will begin providing over co-axial cable a 1980's version of the information service Ida Cates supplied to telephone customers.

The range of information service will, of course, be a little broader — several thousand pages of information on world and local news, weather reports, video games, world and local sports news, consumer information, recipes, local entertainment and perhaps even an electronic version of the yellow pages in the telephone book.

This information won't come from one beleaguered operator as in the past, but from many specialists in the provision of information. Nine



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Two-way trial to begin in Montreal

In late 1981, an innovative cable TV company in a Montreal suburb will start up a Telidon field trial involving a complete, integrated two-way information retrieval service.

The company, Télécablé Vidéotron, will use one cable channel to carry the Telidon signals, and will use packet-switching and multiplexing techniques to ensure a high rate of data transmission.

A central computer at the cable company will contain the basic Telidon data base, as well as other information. This same computer will switch requests for information from the 250 user terminals to other computers in the area containing Telidon data

bases. These other computers will then relay the information back to the central computer which in turn will send the information on to the user.

As well as the usual mix of news, weather, sports, video games, entertainment listings, classified ads, real estate listings, yellow pages listings and so on, Télécablé Vidéotron plans to offer users access to bibliographic data banks and to the computer-assisted learning programs created by the University of Quebec.

The cable company will also offer such futuristic services as automatic fire and burglar alarm reporting, remote utility-meter reading, medical assistance and remote home maintenance.

For more information, please contact Télécablé Vidéotron, 3700 boul. Losch, Saint Hubert, Quebec, Canada J3Y 5T6. Telephone: (514) 656-2111.

TELIDON TODAY

large companies have already expressed an interest in providing the necessary information.

A spokesman for one of the newspapers intending to participate in the project commented: "Project Ida offers us an opportunity to try, on an experimental basis, electronic delivery of the product we know best. Using our additional expertise in electronic word processing, we hope the experiment will enable us to put the written word and graphics in a reader's home at the touch of a button."

Manitoba Telephone System vice-chairman, Glover Anderson, is also very optimistic about the future of an electronic newspaper carried over Telidon. "We can foresee people pressing a few numbers and calling up the front page of a newspaper onto their TV screen," he says. "When you consider that 60 per cent of newspaper costs are in production and distribution, you can appreciate the implications of this advanced technology."

Along with Telidon, residents will receive such new services as: automatic fire alarm reporting; free closed-circuit TV on which the user can request movies, sports and cultural events; stereo music on request; automatic electricity and gas meter-reading; and digital telephone transmission.

These other services will be carried on the same single coaxial cable as Telidon.

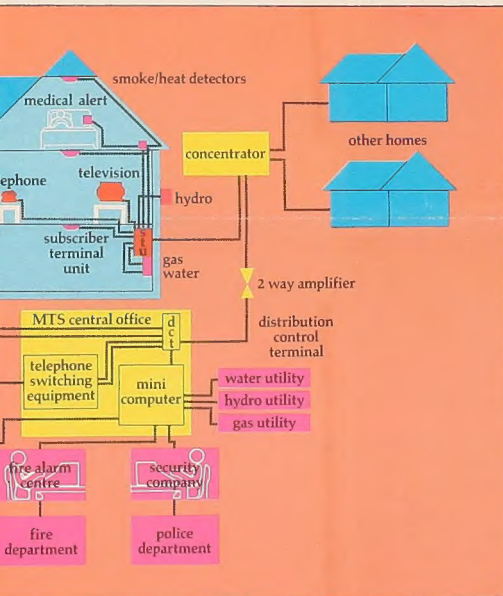
For more information, please contact Project Ida, the Manitoba Telephone System, Area B301, P.O. Box 6666, Winnipeg, Manitoba, Canada R3C 3V6. Telephone: (204) 947-8479.



Manitoba Telephone System

Manitoba Telephone System crew string coaxial cable across the Assiniboine River for Project Ida.

Project Ida tests a full range of services over a single coaxial cable network.



Two largest cities test Telidon

Early in 1981, Canada's largest telecommunications carrier and the Government of Canada will jointly embark on a \$10 million (Cdn) interactive videotex field trial in which 1 000 user terminals and 28 information provider terminals will be used. It is the largest Telidon field trial announced so far.

The carrier, Bell Canada, has for the upcoming trial developed its own videotex system using the alpha-geometric Telidon approach. The trial will be conducted in Canada's two largest cities, Toronto and Montreal.

"We have been genuinely impressed by the government's Telidon technology since its introduction," says Bell Canada president, J.C. Thackray. "Now that we have had the opportunity, during our Vista pilot project, to explore broader system design issues, we feel we are in a better position to apply this new technology to our service concept."

Over 100 000 pages of videotex

information will be available over an ordinary telephone line for display on the residential or commercial user's color TV set. The information will include constantly updated travel schedules; news, weather and sports headlines; stock market quotations; consumer bulletins; entertainment guides; classified ads; and other "yellow-pages" or service-directory type listings.

Users will also be able to carry out such activities as teleshopping, reserving plane tickets, and leaving messages for other users.

A variety of potential information providers demonstrated strong interest in Bell's interactive visual communications concept during a previous field trial. Many of these will be participating in the upcoming trial.

For more information, please contact Project Vista, Bell Canada, 5th floor, 25 Eddy Street, Hull, Quebec, Canada J8Y 6N4. Telephone: (819) 776-7633.

The first intelligent data modem in the world: the Gandalf SM-96 supermodem.



Optical fibres carry Telidon

In mid-1981, the Telidon visual communications service will become one of many carried by an integrated fibre-optics transmission system in a small town in the prairie province of Manitoba.

This \$6 million (Cdn) field trial, sponsored by the Manitoba Telephone System, the Government of Canada and the Canadian Telecommunications Carriers Association — the trade association of Canada's major telecommunications carriers — will be the first in a rural setting to test the feasibility of optical fibres as a multimedia delivery system.

The interactive Telidon visual communications service will be carried by optical fibres to 150 user terminals located in homes and businesses in Elie, Manitoba. As well as permitting instantaneous retrieval of a wide range of continually updated information from the Telidon data base, the Elie field trial may also involve experiments in teleshopping and telebanking.

The fibre-optics network will also bring Elie residents private telephone service, FM radio broadcasts and multi-channel television, in many cases for the first time.

For more information, please contact the Elie Project, the Manitoba Telephone System, Area B301, P.O. Box 6666, Winnipeg, Manitoba, Canada R3C 3V6. Telephone: (204) 947-8479.

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In U.S.: Gandalf Data Inc., 1019 South Noel Street, Wheeling, Illinois 60090 (312) 541-6060

In Canada: Gandalf Data Communications Ltd., Gandalf Plaza, 9 Slack Road, Ottawa, Ontario K2G 0B7 (613) 225-0565

In U.K.: Gandalf Digital Communications Ltd., 4 Cranford Court, Hardwick Grange, Warrington, Cheshire, England Padgate 925-817-755

bibliographic data bases and a host of other kinds of information are in machine readable form, ready for conversion and insertion into the Telidon data base as soon as the market materializes.

Electronic boutique

VISPAC president Haslam sees the Telidon information market-place developing as follows: "I think basically there will be two kinds of organizations which place material in computer storage for retrieval by the public or for specific private uses. In the first instance, there will be information providers who operate the electronic equivalent of a 'boutique', where certain specific material is offered for retrieval. Then there will be those who in effect operate a 'department store' by serving as brokers or umbrella information providers both for material they develop themselves and for that developed on behalf of others.

"I think it is fair to assume that some information available to the public in a mass-market videotex system will be free of charge to the subscriber since it will be paid for by an advertiser or sponsor. Other information will cost the subscriber money and that money will go back through the network to the owner of that information."

Information providers also believe many large and small businesses will be interested in the system. For instance, a Telidon display terminal in the cockpit of a plane could provide airline pilots with a detailed map of the

Information providers form association

Some 200 corporations and individuals have already expressed an interest in becoming information providers for Telidon.

In late 1979, the 20 major potential information providers in Canada formed their own trade association, the Videotex Information Service Providers Association of Canada (VISPAC). Its members include newspaper publishers, representatives of telephone companies and their yellow pages organizations, computer companies, federal and provincial government departments, universities and other educational concerns, retailers and organizations in the entertainment and travel business.

"You can't spend much time with a videotex system without being impressed..."

VISPAC president Gerry Haslam recently explained why so many organizations are anxious to participate. "Most of the information providers at this point are involved either because they're afraid that if they don't become involved their present mandate (either for profit or public service) will be eroded, or because they see an opportunity. You can't spend much time

with a videotex system, and not be enormously impressed with its potential as a force for good in this society."

At present, there is a great deal of activity among Canadian information providers. Many are already working closely with sponsors of major field trials to establish the structures of their data bases and plan how to make their information accessible to videotex users in the most efficient manner possible. Simultaneously, they are designing the pages they will put on the system, as well as working on the software needed to convert automatically their machine readable information to a Telidon format for insertion in the Telidon data base. Others have already begun training their page designers and IP terminal operators, and are establishing norms for the creation of content.

Many feel a small investment now will enable them to ensure that the technology develops to meet their future needs.

Even in the longer term, most believe costs will not be excessive. Many expect to be able to reach a large market of specialized users and perhaps even a mass market of home users in the near future, though it is too early to ascertain exactly how the videotex market will develop. If, as seems likely soon, the cost of basic

user terminals comes down to around \$250 (Cdn), a significant obstacle to the emergence of a mass market will vanish.

All the Canadian information providers are impressed by Telidon technology because of its versatility and its built-in capacity to adapt to future technological change that may render other videotex systems obsolete. They also realize that, because the system offers a range of resolutions, colors and other features suitable to any kind of display technology, Telidon manufacturers will be able to offer a range of terminals with features and prices suitable for almost any need or pocketbook. Telidon, in short, may well be adaptable to virtually any market — an important consideration for information providers.

The unequalled graphic and color capabilities of the system are also a definite attraction.

Features and prices suitable for almost any need or pocketbook

Department stores, supermarket chains, other retailers, yellow pages organizations in telephone companies, newspaper publishers and advertising firms all recognize that Telidon is capable of creating and displaying attractive, full-color ads involving motion and even facsimile-like pictures of products. Newspaper photos and cartoons can also be easily reproduced.

Moreover, a number of educational institutions and government departments are excited by the prospect of being able to provide gripping illustrations of information in a host of different contexts. Even the Canadian weather bureau has expressed an interest because Telidon alone has sufficient resolution to display weather maps at high resolution for internal use and at a lower resolution for users with less expensive terminals.

These information providers also recognize that it is easier to get information into the Telidon system than other videotex systems and, once there, to edit or update it. In addition, the system can automatically generate pages — a capability already demonstrated with wire-service information in machine readable form. At the present time, news stories, weather maps,



VISPAC president Gerry Haslam.

airport at which they'll soon be landing and save them checking through reference books. Architects, engineers and draftsmen a continent apart could correct each other's blueprints and drawings on the electronic blackboard into which Telidon would transform their TV sets. Some retailers are already planning to display to potential homebuyers the floor plans of houses for sale. Security firms may soon be employing the communications capabilities of the microprocessor inside the Telidon terminal to monitor fire and burglar sensors inside a home.

Consumer information services

There are already plans to offer a teleshopping service over Telidon to home users. They would be able to access an electronic store catalogue filled with attractive displays of goods, select the item they want, then punch in a credit card number and await delivery of the goods. Consumer information services, as well as a host of other community information services, are also on the drawing boards. With Telidon software available in the near future, consumers will be able to convert their Telidon terminals into home computers containing programs to calculate mortgage payments, income taxes or virtually anything else. A wide variety of video games and even horoscope programs are also already being planned, as are computer-aided learning sequences by educational institutions.

In a real sense, Telidon marks the beginning of a new era in telecommunications service.

Infomart is information

A joint venture of Southern Inc. and Torstar Corp., Infomart is actively involved in all facets of electronic publishing development and delivery.

For example, Infomart provides database source and search services to libraries and industry — with over 500 businesses and institutions currently connected to its data search and retrieval network. In addition, the company is actively involved in developing and seeking new databases.

As Canada's first and largest videotex service company, Infomart is participating in three Canadian videotex field trials beginning in 1980 — and is dedicated to demonstrating the viability of this new information retrieval technology as a two-way electronic highway to the home.

Infomart is also active as a consultant on electronic publishing applications, and in providing seminars, conferences, and education.

Beyond its role as an information provider and broker, the company is in the business of developing and supplying information retrieval systems for business, government and public service applications.

In short, Infomart is information.

Infomart

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Obsolescence made obsolete

Further refinements to the Telidon system are inevitable and will be easy to carry out because they are already inherent in the existing protocol. For this reason, no existing Telidon equipment will be made obsolete by future improvements. All will be consistent with an enhanced Telidon package.

Some of these enhancements will be available in 1980. Others will come on stream in the near future as demand for them crystallizes — at which point Telidon will have become a fully mature medium of interactive image communication.

Enhancements to Telidon are relatively easy because the Picture Description Instructions at its heart form an extendible code to which new instructions, resulting in new features, can be added without invalidating what has gone before. At the same

time, the Telidon system has been designed so that the videotex terminal is almost entirely independent of the transmission mode and the data base. Thus, a change in any one of these technologies will not render the others obsolete and will be easier to implement because its impact on the other technologies will not have to be considered.

Meanwhile, the designers of other systems are trying to upgrade them to Telidon's level of capability. Telidon's graphic and other capabilities, its ability to provide the degree of resolution and range of color appropriate to whatever display technology is used, have all become objects of imitation. In other videotex systems, most of these features are incorporated as departures from — not enhancements of — the equipment used.

Five Department of Communications researchers (with plaques) are honored as inventors of Telidon. From left are: Robert Warburton, John Storey, Deputy Minister Bernard Ostry,

Doug O'Brien, Bill Szwachuk, project leader Herb Bown, and Assistant Deputy Minister, Research Doug Parkhill.



Easy to use

Telidon information provider (IP) terminals are superior to those of any other system in the world, in terms of the ease and efficiency with which an operator can create pages of textual, graphic and photographic information.

In summer 1980, a second generation of Telidon IP terminals will be made available. Enhanced hardware

and software will be built into the new terminals to increase radically the speed with which information can be created.

Features will include an improved editing capability and graphic tablets upon which the operator can draw to create graphic images on the screen. Enhancements to the basic Picture Description Instructions will also enable the operator to create a wider range of images — including simulations of motion — much more rapidly on the screen.

Terminals fall in price

At present, Telidon user terminals cost about \$1200 (Cdn) or 70 per cent less than those of a year ago. This year, costs will fall as much again as production increases. The introduction within a few years of terminals using VLSI (very large scale integration) circuits will bring prices down even more dramatically.

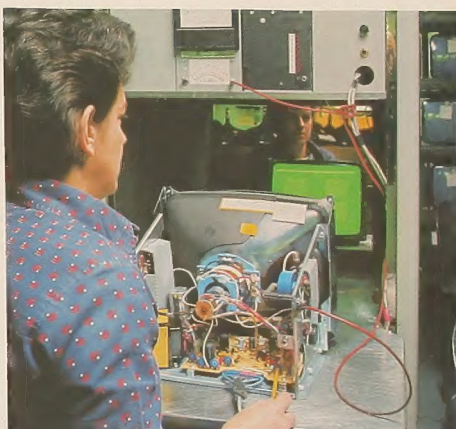
The terminals available this year will offer new options. In addition to terminals with the standard calculator keypad, users are now able to purchase terminals with typewriter-like key-

boards which will vastly increase their level of interaction with the system.

The flexibility of these terminals is enhanced by the absence of wires connecting keypad or keyboard to the TV.

The new generation of terminals will also have an improved capability for displaying motion on the TV screen. Response time will be quicker too. In addition, users will be able to play complicated video games and send canned messages to other terminals.

These terminals will also be considerably smaller than existing terminals, now about the size of a small attaché case. Their active components will fit on a printed circuit board small enough to fit inside a TV set.



Electrohome Ltd.'s CRT display receives test and quality audit checks.

In some cases, the equipment or the structure of its data base can be rendered obsolete, at some cost to both users and information providers.

Few deny now that the Telidon system is superior to other systems, even with their improvements. But Telidon is continuing to evolve, and its technical enhancements flow directly from the Telidon protocol itself.

The reason is historical. Telidon emerged from research (conducted since 1973 by the Image Communications Laboratory of Canada's Department of Communications) into a class of general problems related to the communication of graphic images down telephone lines. The research differed from standard computer-graphic activity, primarily because it focused on devising a highly efficient means of communicating graphic information along a line with a narrow bandwidth. During the next four years, various special purpose systems were developed and put into service.

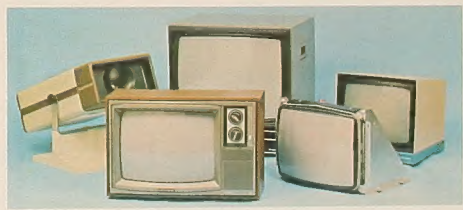
Then, in 1977, the research unit

was asked to simulate the British Prestel system. In four days, the system was simulated and demonstrated, and the lab manager, Herb Bown, was heard to mutter he wouldn't design a videotex system that way. A short time later, a prototype "Telidon" system was being used for departmental briefings.

Because of the Laboratory's broader research interests, the Telidon protocol — the Picture Description Instructions — is really only a subset of a larger set of Graphical Picture Instructions intended to ensure the most efficient and versatile use of limited bandwidths. The entire set will soon be an integral part of the Telidon system.

The existing Telidon protocol is designed to permit the easy addition of new features to the system without rendering obsolete existing hardware, software or data bases.

The future is now a matter of building on the solid foundation which has already been established.



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Soon...

TELIDON TODAY

Terminals will talk to each other

In the near future, it will be possible for a Telidon user to send graphics, text or photographic information from his own terminal to that of another user.

Such information could be held in a kind of electronic mail box for display when another user logs onto the system.

If both people are using their terminals, the two could "share" a common visual space or electronic blackboard formed by their TV screens. Thus, one user could correct another's drawing, and the correction

would be transmitted almost instantaneously to the other's screen. At the same time the data are being transmitted over the phone line, the two could be discussing the implications of the correction over the same line.

Such communication has already been demonstrated with existing Picture Description Instructions. With the addition of Picture Manipulation Instructions, terminal to terminal communication will combine a unique flexibility with extremely efficient transmission capabilities.

Terminals will remember and compute

In the not too distant future, a Telidon user will be able to retrieve complete computer programs on his own terminal from a host or data base computer, then disconnect from the communications line and operate independently. The technique is called "down-line loading," and could save

the user money by reducing his transmission time. It could also speed up the responsiveness of the system to his needs — an especially important consideration with respect to certain kinds of computer games or calculations such as income tax.

Enhanced software capability

Right now, the Picture Description Instructions so central to the existing Telidon software are just one subset in a far larger set of Graphical Picture Instructions.

The entire set of Graphical Picture Instructions may become part of the Telidon protocol in the near future. In addition to the existing subset of Picture Description Instructions, Telidon software would include Picture Interaction Instructions, Picture Manipulation Instructions, Picture Presentation Instructions and Picture Transformation Instructions.

With the addition of these other subsets, it will become possible to create images and speedily manipulate, recreate, rotate, scale or transpose in almost any way virtually any portion of an image. The possible

ramifications and multiple applications of these capabilities are almost beyond counting.

For example, with all or even some of these subsets, it would be possible to create full-scale, full-color animation sequences on the Telidon screen. Teleshopping and the electronic transfer of funds would also be possible, as would complicated tele-software for games, for computer-assisted and managed learning sequences, and for converting the Telidon terminal into a computer to calculate mortgage or income tax payments.

Indeed, the applications would only be limited by market realities and the imagination of information providers and users.

Telidon users will share a common visual space, with users able to correct or modify material on the screen.

Many compatible data bases

At present, all information transmitted over the Telidon system is located within one data base stored in a central computer. This won't be the case for long. In upcoming field trials, several data bases will exist, each in its own computer. All will be accessible to the Telidon user. The central com-

puter will contain one of the data bases, and will also act as a switch to relay the user's request and retrieve information between the user's terminal and third party data bases in a remote computer. In this fashion, any number of data bases could become available to the user.

Telidon on a silicon chip

In the immediate future, very large scale integration (VLSI) will shrink the size and cost of the Telidon terminal even further. This third generation terminal will be much more efficient than its predecessors and probably retail for around \$250 (Cdn) or less.

These new terminals will fit inside the display monitor and its micro-processor will consist of anywhere from 1 to 10 VLSI silicon chips.

At present, a Canadian company is investigating the economic and technical feasibility of manufacturing customized VLSI chips for Telidon.

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TELIDON TODAY

Telidon — a new window on the world

Telidon's superior graphics - high resolution - images - range of colors - use the natural language of drawing

Telidon is the world-leading videotex system which allows home or office television sets to receive up-to-the-minute textual information and high-quality graphics from a network of computer data banks.

Easy enough for a child to operate, yet sophisticated enough for complex business and scientific applications, Telidon can provide the latest information from news services, weather offices, stock exchanges, stores, restaurants, schools, publishing houses, government offices and a wide range of other sources. Telidon can be used for electronic mail and messaging, computer games, mathematical calculations and other interactive functions such as teleshopping, telebanking and reservation services. Telidon equipment can handle inter-office communications and word processing and can also serve as an audio-visual system for seminars, public displays and training purposes.

Because of its superb graphics, efficient information coding scheme, and its ability to be transmitted over any medium, Telidon has been chosen by some of the largest and most influential communications companies in the world.

In 1980, Telidon was approved as a world videotex standard by the International Telegraph and Telephone Consultative Committee (CCITT), the United Nations agency responsible for telecommunications standards.

Today, Telidon is the recognized standard of excellence for North America and is increasingly accepted by communications experts around the globe as the world's best videotex system.

Telidon forms the heart of the U.S. videotex standard proposed in May 1981 by American Telephone and Telegraph (AT&T), the world's largest telephone company. The Columbia Broadcasting System (CBS) has also supported the Telidon - AT&T Presentation Level Protocol for teletext in submissions to the U.S. Federal Communications Commission (FCC). In addition, this standard has been endorsed by *Knight Ridder Newspapers*, *Time Inc.*, the *Times-Mirror Company* and a number of major U.S. retailers and banks.

Researchers from the Canadian Department of Communications who invented Telidon in 1978 worked closely with officials of AT&T and CBS to develop these standards to serve the needs of North America and the world. Canadian equipment manufacturers and system designers who pioneered the development of Telidon technology are now providing equipment and services to companies and government agencies in the United States, Venezuela and Australia. Telidon equipment is being manufactured by some of the biggest and most experienced firms in Canada, including Northern Telecom (the second largest communications equipment producer in North America), Electrohome, and AEL Microtel Ltd. Norpak, the firm which built the first Telidon terminal, recently received a \$30 million investment from the Noranda Group, one of Canada's largest resource companies.



Aid for new Telidon systems

On January 12, 1982 Communications Minister Francis Fox announced 52 Telidon projects which have qualified to receive a total of \$9.5 million in assistance under the Telidon Industry Investment Stimulation Program (IIISP). Under the program, project organizers and the DOC will each contribute an equal number of Telidon terminals. It is expected that more than 8,000 terminals will be installed under the program by 1983.

The qualifying organizations have proposed services ranging from business systems to computer-assisted learning and health programs. Among the proposed applications are:

A service to provide farmers with information about market prices and availability of space in grain elevators, to be developed by the Saskatchewan Wheat Pool

— Fishnet, a service to provide Atlantic fishermen with information about fish stocks, prices, regulations and related services, to be developed by New Brunswick Telephone Company
— A real estate listings service to be developed by A.E. Lepage Ltd of Toronto

A tourism data base, large screen displays and an internal product inventory control system to be developed by Radio Payette of Montreal

— An inventory service for suppliers and users of heavy equipment in resource industries, to be developed by Time Shifts Video Systems of Edmonton.

— An advertising system with touch-sensitive terminals and large-screen displays for shopping malls and public areas, to be developed by the London Free Press of London, Ont.

— A page creation and software service, to be developed by Marilimage of Montreal

— A unit combining the Mitel SX-2000 Superswitch telephone exchange system with Telidon terminals to provide computer-assisted instruction on how to use the Superswitch system, to be developed by Mitel of Canada

— Computer-aided teaching aids to be developed by the Université du Québec in Hull.

— A 1,000-terminal public Telidon service and tele-education service for Quebec, to be developed by Edimedia Inc. of Quebec.

— Courses to train students in page creation, system design and maintenance, and videotex marketing, to be developed by a number of universities and community colleges

— Computer-aided consulting and diagnostic services, to be developed by Toronto General Hospital

An "electronic journal" for the handicapped, to be developed by Agora-Laboratories de Télématique of Montreal

Creation of a tourism data base and installation of terminals in parks, historic sites and other locations by the Newfoundland Telephone Company

The applicants have suggested a number of ways to deliver their Telidon services. Some will operate over telephone lines, while others will employ cable, microwave, satellite or broadcast teletext signals.

Mr Fox praised the imagination and careful planning which went into the proposals "Canadians have recognized the value of Telidon as an information tool with a wide range of applications," he said.

Mr Fox said the program will strengthen the Telidon equipment manufacturing industry and accelerate the pace at which the price of Telidon equipment is declining. Telidon terminals which cost \$2,400 in 1979 will retail for about \$300 in 1984.

The program will employ hundreds of Canadians and help the private sector develop the skills and resources to operate and market commercially viable videotex services.

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A new way of communicating

Telidon is the advanced information system which has been designed to meet the information and entertainment needs of home and office users.

With an inexpensive Telidon terminal attached to an ordinary television set and a communications link such as a telephone line or TV cable, the user can call up a wide range of information, from current news flashes to detailed statistical analyses, from shopping guides to first aid lessons.

The same inexpensive decoder can be used in the most advanced high-resolution color monitors to provide even more detailed and accurate images for scientific and technical purposes.

Telidon terminals can also receive pages of information which have been broadcast over the airwaves as part of a regular television signal. The CBC, for example, will broadcast program notes, weather and news flashes which can be received by anyone with a Telidon teletext terminal.

Some Telidon terminals have typewriter-like keyboards which allow their users to write reports, leave messages or search for information in computer data banks by typing in key words. Other terminals have simple keypads

with numbers on them that enable the user to retrieve information from numbered indexes, or to perform calculations, place an order and leave their credit card numbers, or play computer games.

Creation of Telidon pages and graphics is done on information provider terminals, which are highly flexible and easy to operate, allowing the artist to draw any picture using the basic elements of graphics: points, lines, rectangles,

arcs and polygons. Images can easily be tinted, scaled to a different size, moved around the screen, rotated, copied or animated. With a few minutes of instruction, even children can create and manipulate basic graphic designs.

Although many different applications of Telidon technology are possible, the system comes in three basic forms: videotex, teletext and electronic audio-visual systems. **Telidon videotex** is an interactive or two-way system in which the viewer, by means of a telephone line or two-way cable, calls up information for display on a modified television set. The viewer can retrieve information from a wide range of data bases which may be stored in computers in the same office, across the city or across the continent. The data base is a form of electronic library with the potential to store any kind of information. Catalogues, weekly grocery specials, daily weather maps, news agency reports, video games, community bulletin boards, classified advertising, technical manuals, training programs, stock market reports, first aid hints, telephone directories and virtually any kind of written or graphic material can be stored in these data bases and made available to Telidon users.

Telidon teletext is the broadcast mode which permits viewers to receive text and graphics on an ordinary television set equipped with a Telidon decoder. The decoder enables the user to choose from several hundred Telidon pages of information which are broadcast in the unused lines of regular television signals (the vertical blanking interval).

Teletext pages are broadcast in continuous cycles which are repeated every few seconds. The user selects a desired topic such as "news" or "traffic conditions" and the terminal

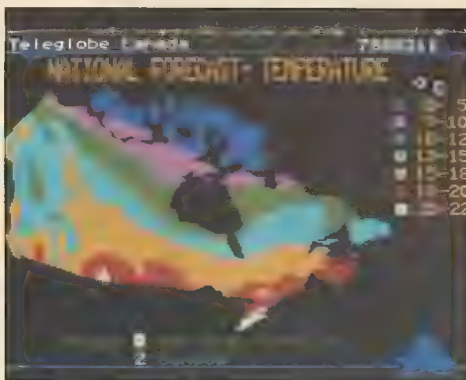
"grabs" that page from the cycle and displays it on the screen. The number of pages in the teletext cycle can vary from a few dozen to a few hundred, depending on how much waiting time the operator wishes to provide. With a 12-second cycle, for example, 100 pages can be transmitted on two unused lines in the vertical blanking interval. These pages can be continuously updated by the broadcaster or replaced with special interest pages at certain times of the day.

With a full cable television channel devoted to teletext, the number of pages in the broadcast cycle is dramatically increased. A 12-second cycle on cable (sometimes called cabletext) could offer the viewer a choice of 12,000 pages.

Telidon pages can also be converted to regular video format and transmitted to all cable subscribers, even if they are not equipped with Telidon terminals. In the province of Quebec, for instance, Telidon pages are now being broadcast to nearly 600,000 cable subscribers in the first phase of the Home Information System Telidon II project being run by Videotron Communications Ltd. During certain times of the day, subscribers can also phone the cable operator and request specific pages of information. In later phases, the Videotron project will allow subscribers to use terminals with keyboards to search for information through a key-word system, and to leave messages for each other.

Telidon audio-visual systems use terminals which have about 65 kilobytes of extra computer memory, enough to store about 100 Telidon pages and display them in a sequence chosen by the push of a button. These terminals allow Telidon's animated graphics and text to serve as an effective, low-cost means of presenting an information display to small groups or large crowds. Telidon audio-visual displays can be accompanied by sound-tracks and the pages can be scheduled to appear in synchronization with music or a narrator's voice. A special advantage of Telidon as an audio-visual tool is that new pages of information can be received almost instantly over phone lines from data bases around the world, allowing the user to update a display in response to audience requests without having to wait for new slides or films to be delivered by mail or courier. Of course, Telidon terminals can also be used with large screen projectors or any other type of electronic display.

Because Telidon is an international standard, all of these different applications are compatible. This means that a page of information created for videotex can be used to reach teletext and audio-visual system users without the need to reformat the information for different applications.



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Telidon at work

As the costs of transportation, paper, postage and labor continue to increase, professional communicators in every country are increasingly recognizing the advantages of high-speed electronic systems for information management, inter-office communications and dissemination of information to the public.

The specialized computer communications systems of the 1960s and 1970s were very costly and restricted largely to the transmission of facts and figures to specific audiences.

Telidon is a new generation of communications technology, an inexpensive and internationally accepted videotex system which can deliver facts and figures as well as high quality, animated graphic images to the general public and to special business users.

Because Telidon is a highly flexible, universally accessible system, it is the preferred choice of information specialists of the 1980s.

Among the organizations using Telidon today are:

- Time Inc. of New York, publisher of *Time*, *Life*, *People*, *Sports Illustrated*, *Money* and *Fortune* magazines, *Time-Life* Books, and several newspapers
- Time Inc. is creating about 25 separate Telidon videotex magazines to be transmitted via satellite from New York to three of the cable systems

operated by American Television and Communications Corp., a Time subsidiary

- In Los Angeles, the Times Mirror group is operating a Telidon system with 350 terminals in homes in Los Angeles and Orange counties

Trial participants will receive a number of information services and be able to perform interactive functions such as receiving seats through the Ticketron reservation service.

Times-Mirror and Infomart of Toronto have formed a joint venture company to market Telidon throughout the U.S. and expect to start at least ten new Telidon systems in the next two years

- In Washington, several U.S. government agencies, public interest organizations, libraries and private companies including *The Washington Post* are participating in a Telidon teletext service which is being broadcast as part of the signal of Public Broadcasting Service station WETA-TV. The project is operated by the Alternate Media Center of New York University School of the Arts.

Terminals in private homes and public locations around the capital can receive the signal, which provides news, sports, weather and public announcements

- Residents of Portland, Oregon will receive several Telidon information-retrieval channels as part of a new cable system operated by Cablesystems Pacific, which is partly owned by Canadian Cablesystems Limited

- The Presidential Office of Statistics and Information in Caracas, Venezuela is operating a Telidon system which allows the public to use terminals in public offices in the capital to obtain information about government services and programs.

- Consolidated Electronics Industries of Melbourne, Australia has agreed to purchase \$3 million worth of Telidon components from Norpak Ltd. of Ottawa during the next three years. The components will be integrated into a range of Telidon equipment to be manufactured by the company for the Australian market

- Siemens AG, one of the largest electronics firms in Europe, is considering the purchase of more than \$10 million worth of Telidon equipment and services from Canadian firms for videotex services in the European Market.

- The Graham Poulter Group of Leeds, England, expects to sell more than \$1 million worth of Telidon equipment for audio-visual, computer graphics and videotex applications in the British market in the coming year.

— Most of the telephone companies in Canada are conducting Telidon trials. Bell Canada, for instance,



is working with the Canadian Department of Communications in an \$11 million Telidon project called Vista, which will provide nearly 70,000 pages of information to 500 terminal users in Toronto, Ontario, Montreal, Quebec,

and Cap Rouge, near Quebec City. Information providers for the Vista data base include government agencies, educational institutions, travel agencies, newspapers, and several of Canada's largest retail chains and financial institutions, among them.

- The Bay, Eaton's, Dominion Stores, Simpsons, the Royal Bank of Canada and Holiday Inns Inc.

- The Manitoba Telephone System is participating in three Telidon projects: Project Ida, a residential videotex service in suburban South Headingley, near Winnipeg; Project Grassroots, a commercial service which provides agricultural information to farmers in Southern Manitoba; and Project Elie, a videotex service operating over optical fibres in the rural communities of Elie and St. Eustache

- The Canadian Broadcasting Corporation (CBC) plans a Telidon teletext service which will involve 750 terminals and provide parallel information services in French and English. Most terminals will be located in homes in Montreal, Toronto and Calgary. Some will be in public locations in all 10 provinces and in CBC regional offices. Information available to terminal users may include a television program guide, a news headline service, captioning for the deaf, and English and French subtitles for programs originating in the other official language

- Ontario's Ministry of Industry and Tourism is installing 2,000 terminals in high-traffic public locations around the city of Toronto. Terminals in hotel lobbies, shopping malls, tourist attractions and

government tourism centres will provide 50,000 pages of information about local and regional attractions and entertainment, as well as comprehensive guides to shopping, services, restaurants and accommodation. It is anticipated that more than one million people will use the system each month.

- Teleglobe Canada, the crown corporation which handles international telephone and telecommunications connections between Canada and all other countries except the U.S., has created the first international Telidon data base. Novatec, The Novatec data base includes information about trade and economic affairs, scientific, government and technical information and information about Canada of interest to other countries.

- The Canadian Department of Supply and Services has created a Telidon data base of 30,000 pages of information about government services and programs. One hundred terminals will be installed, some in government offices, others in unmanned carrels in public locations, and some in mobile information units which will move from community to community.

The public will be able to find out about job openings in other parts of the country from Employment and Immigration Canada's Job Bank, which will also be accessible through the DSS data base. The Employment and Immigration department plans to install extra terminals in communities where unemployment rates are unusually high

- Digital Equipment of Canada, which introduced the world's first mini-computers, has purchased Telidon electronic projector system terminals for an internal office communications and audio-visual training system.

Photo creation artists use Telidon terminals in Caracas, Venezuela.



Photo, top right
Workers in Manitoba install optical fibre cable that will carry Telidon as well as telephone and video signals

IF YOU'RE THINKING TELIDON THINK NORTHERN TELECOM

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EQUIPMENT FOR EVERY TYPE OF

Canadian manufacturers produce a wide range of Telidon terminals and equipment to serve the needs of different videotex and teletext system users. While all Telidon systems are designed to be compatible with each other, a number of options and special features are available for particular applications. In addition, components are available which permit existing home and office computers to function in the Telidon mode.

Telidon user terminals are available in a number of configurations for use in homes, offices, industrial settings, schools or public displays. Basic models include the Telidon decoder, which connects to the television set or color monitor, and a keypad, which allows the user to request information from the data base, play games, perform calculations or leave simple messages. In integrated user terminals, a color monitor and Telidon decoder are built into the same unit. Telidon user terminals may also be equipped with typewriter-like keyboards which permit more complex messaging services and access to data bases which support key word searches. Videotex systems operating over telephone lines require modems which can be purchased

separately or built in to the Telidon terminals.

Information provider terminals are used to create Telidon pages and graphics. They are powerful micro-computers with disc drives to store page creation instructions and finished pages. Information provider terminals have a black and white command monitor which displays the page creation instructions to the operator, and a color monitor which displays the pages being created. In addition to a typewriter-style keyboard, information provider terminals may be equipped with joy sticks or trackballs to move the cursor around the screen for drawing, digitizing tablets which allow the operator to sketch freehand or to trace original pieces of artwork, video cameras for image copying via overlays, and hard-copy printers. Information provider terminals can serve as stand-alone data bases for small Telidon systems and some may be used as office word processors.

Following are some of the companies that supply Telidon equipment. Customers should consult individual firms for product descriptions and specifications.

A.E.L. Microtel Ltd. of Burnaby, B.C., produces integrated Telidon user terminals for business, dual-capacity Telidon terminals capable of conventional 80-character display, and Telidon components.

Apple Computers sells Telidon decoder boards that allow Apple II and Apple III personal computers to access Telidon data bases and create Telidon graphics.

Cablesare Ltd. of London, Ont., provides Telidon user terminals with touch-sensitive screens, large-screen terminals, the Electronic Picture Painter page creation system, network concentrators, head-end processors for cable systems, and the Cablesare Viewdata Gateway processor.

Consolidated Electronic Industries of Melbourne, Australia, is developing a range of Telidon equipment for audio-visual, closed user group, and stand-alone applications.

Digital Equipment of Canada of Kanata, Ont. provides host computers and services for Telidon videotex systems.

Electrohome Ltd. of Kitchener, Ont. manufactures integrated Telidon user terminals for business applications.

The Genesys Group of Ottawa sells Genesys turnkey Telidon systems capable of supporting 16, 32, 64 or 100 simultaneous users.

The Graham Poulter Group of Leeds, England, is developing a range of Telidon-based products for audio-visual, graphics, videotex and closed-user group applications.

Macdonald Dettwiler & Associates Ltd. of Richmond, B.C. provides page creation systems and head-end news wire processors for cable television systems.

Mitel of Kanata, Ont. is developing a new version of its SX-2000 Superswitch telephone exchange system that incorporates a Telidon terminal allowing self-instruction on installation, maintenance and operation of the Superswitch.

NABU Manufacturing of Ottawa builds Telidon-compatible personal computers designed to interface with



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We are the world's leading commercial provider of Telidon services

Since its creation in 1975 Infomart has been actively involved in all facets of electronic publishing providing, for example, data base source and search services to over 500 libraries and industrial firms across Canada.

Infomart has also emerged as Canada's first and largest videotex services company, and has become the leading international commercial provider of Telidon services and systems.

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Infomart has also designed and launched "Grassroots": an agricultural videotex service that is the world's first commercial application of Telidon videotex technology.

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TELIDON TODAY OF USER

cable television systems, business computers, and head-end systems for cable system operators

Norpak of Kanata, Ont. builds a range of Telidon videotex and teletext user terminals, page creation terminals, components, specialized video display systems and Hemton Electronic Projector System terminals with extra memory for audio-visual presentations

Northern Telecom of Montreal, Que., supplies VISTA Telidon terminals and Videotex Information Provider System (VIPS) page creation terminals

Siemens AG of West Germany is interested in developing a range of Telidon videotex equipment, including page creation and user terminals for the European market

Tayson Information Technology Inc. of Calgary, Alta. sells the Tayson Personal Videotex System that uses an IBM Personal Microcomputer for stand-alone and interactive Telidon videotex applications.



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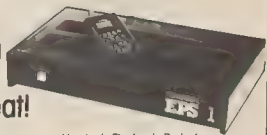
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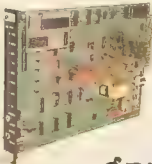
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A system that will not become outdated

The Telidon system has been designed to work on all existing communications networks and to accommodate advances in technology without becoming obsolete.

The researchers who invented Telidon had four basic principles in mind

1) Maximum independence of the terminal, the data base and the transmission medium to ensure that those who use the system can choose the type of equipment and transmission methods best suited to their needs. Unlike earlier European and U.S. videotex systems in which the coding for pages of information in the data base is dependent on

the type of television set which is used, pages in a Telidon data base can be displayed on any type of monitor, whether it be a European 625-line television set, a North American 525 line set or some future high resolution screen with 1,000 lines or more. This means that an electronic publisher does not have to face the expense of creating separate data bases for different countries or different applications. Telidon pages have been transmitted by television signal, telephone line, coaxial cable, optical fibres, laser beam and satellite broadcast.

2) Simple and flexible information creation procedures to ensure that all users, whether they are

individuals with simple messages or large corporations with highly detailed information programs, can have access to the system with minimal cost or technical training. Information provider terminals are easy to operate and have a built-in prompting system that guides the user through the page creation process.

3) Efficient data transmission and storage techniques ensure maximum use of computer and terminal memory space and reduce the costs and time required to transmit the information.

4) Flexibility to accommodate technological advances. Just as a black and white television set can

interpret color television signals, the Telidon system is designed so that early equipment models will be able to display information prepared for future generations of equipment. The independence of the different parts of the system means that advances in Telidon equipment — TV sets, transmission media, and new data base storage techniques such as videodisks — will not make Telidon obsolete. In fact, they will make it look even better.



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In today's rapidly changing society, information has become an essential commodity which affects the way we do business, the way we learn, and the way we conduct our daily lives. Conventional media have been unable to keep up with the public demand for information. Daily newspapers print yesterday's news. Weekly newsmagazines are stale before they reach the stands. Encyclopedias costing hundreds of dollars are often outdated before they are printed because of developments in science or changes in the international political scene. Radio and television can provide the headlines and sketchy details about the day's events, but the audience must be tuned in at a pre-scheduled time in order to receive the information.

For advertisers and government agencies who wish to reach the public with information about products, services and programs, traditional methods of distribution are increasingly expensive. For consumers, obtaining information by phone, by mail or by visiting the source is time consuming and often frustrating.

In contrast, Telidon offers a high-speed communications service which allows those who need information to receive it quickly, accurately and when they need it most, even if they live in remote locations.

Hundreds of private and public organizations in Canada and other countries are participating in Telidon projects to find out what kind of information the public wants most. Following are some of the information services available through Telidon:

Education: TVOntario, the educational television network operated by the Ontario Educational Communications Authority, has worked with schools, libraries, museums and other agencies to create about 2,000 pages of educational information. Subjects include the illustrated history of astronomy, physics, mathematics, etc. Many of the information modules on the videotex data base include quizzes and educational games. TV Ontario is now developing a Telidon-based career guidance system to aid students across the province. Terminals in classrooms around the province can be used to supplement regular classroom activities or as self-teaching aids. TVOntario also transmits a number of pages in teletext mode as part of its regular broadcast signal to communities across the

province. In Northern Ontario, these teletext signals have been received via earth station from signals broadcast from Canada's Anik B satellite.

Alberta Government Telephones is also experimenting with Telidon as a supplement to correspondence courses. In many remote communities, students must take lessons by mail because there are not enough pupils to justify teachers for specialized subjects. AGT and the provincial department of education have created illustrated learning packages that allow students to test themselves on their knowledge of subjects such as mechanics.

Students at the University of New Brunswick St. John Campus can use the Project Mercury database, Datavision, to check the university course calendar and find out about upcoming lectures and special events.

News, weather and sports: The Grassroots service in Manitoba and Novatex, the international service operated by Teleglobe Canada, receive information directly from the Broadcast News wire and automatically create Telidon pages which are divided into such categories as parliamentary news, international news, national headlines, sports and weather. Broadcast News is the national newswire service operated by the Canadian Press and is used by most radio and television stations in Canada. While radio listeners can hear only those items which are selected for newscasts by station editors, Telidon users have access to all the

news they want.

Newspapers such as *Le Soleil* also prepare daily news packages for users of the Vista Telidon system, which operates in Toronto, Montreal and Quebec City.

In Manitoba, the Grassroots system provides detailed weather information which is essential to farmers for planting, plowing, spraying and harvesting. More than a dozen weather maps are updated daily with current and long-range forecasts for North America, the prairies and their local communities. Users have a complete picture of what the weather in their area will be like six hours from now, 12 hours from now, 24 hours from now or a month in the future. The Grassroots data base is operated by the Manitoba Telephone System, the provincial agriculture department, and Infomart of Toronto.

Business information: The Grassroots computer is also able to connect with the central computer of the Winnipeg Commodities Exchange to obtain continually updated figures on prices and volumes of commodities and futures traded on the exchange.

The Marketfax service provides complex analyses of the performance of stocks on the Toronto Stock Exchange and will soon add the Vancouver, Montreal, New York exchanges and Ames. Marketfax is operated by Faxtel Information Systems Ltd. of Toronto.

From the Novatex data base, Telidon users can retrieve international trade statistics and information about business opportunities in Canada.

Inter-office message services are also provided by several Telidon

systems, including B.C. Tel's Gateway project, Teleglobe Canada's Novatex, and the three computer service bureaus operated by Infomart in Toronto, Ottawa and Winnipeg.

Advertising and teleshopping: The Bell Vista data base contains weekly grocery specials from Dominion Stores and advertising from a number of prominent Canadian retailers. Eaton's, which was forced to drop its traditional catalogue shopping service several years ago because of high operating and printing costs, is investigating the use of Telidon as an electronic catalogue and teleshopping service in which users would order items with their keypads by specifying size and quantity of desired items and entering their personal account numbers. Similarly, the system can be used to determine how many seats are available for a concert or sports event, and to reserve tickets in preferred locations and price ranges.

Consumer services: In addition to advice from organizations such as the Consumers Association of Canada, Telidon's computing power can aid customers in selecting the best product for their needs. Carfax of Toronto has created a data base which helps potential car buyers to choose an automobile. Customers use their keypads to answer questions about what price they want to pay, how big a car they want, what kind of fuel efficiency and performance they expect and so on. The computer compares the answers to the specifications of more than 750 car models and provides the names of those which are closest to the customer's requests.

With an experimental Telidon keyword index system developed at the University of Montreal, product names can be typed with a keyboard and the computer will search through the catalogues of several stores at once to give the user a list of products ranked by price.

Telidon can also provide restaurant guides, so that users can view several menus before they decide where to eat. The Teleguide to Toronto for example, allows diners to choose a restaurant by cuisine type, by price range, or by distance from their hotel. Once they have chosen a restaurant, diners can see a map of how to get there and instructions on which public transit routes to take. Electronic Yellow Pages listing local business and services are also available on the Vista, Ida and Project Mercury Datavision data bases.

Tourism: Maps of scenic routes, parks, and illustrations of historic sites can be found on several data bases, along with information about popular tourist spots, services available, ferry schedules, operating hours, fees, etc. In the future, Telidon users will be able to make reservations for tours, camp sites, motels and other services.



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Coming soon from Telidon

Researchers in government and industry are continually developing new applications of Telidon technology. Advances in computer design, communications networks and manufacturing techniques will lead to more versatile equipment and lower costs.

Many of these new features have been demonstrated in public exhibitions. Others have been shown in preliminary form in laboratory displays.

Terminals with enhanced memory:

The Department of Communications has demonstrated prototype terminals in which extra memory has been used for several functions, including telesoftware, full-color Telidon, and color-photo Telidon.

In telesoftware terminals, programs for computer games, tax calculations and similar functions can be "down-loaded" from the central computer to the terminal and stored in local memory. The user can then disconnect from the main computer and use the local terminal as a personal computer. This reduces the load on the central computer as well as the time and costs involved in being connected to the main computer.

In full-color Telidon terminals, graphics can be presented in a range of shades and pastels not available in regular terminals which use a limited number of primary colors and combinations.

Color photo-Telidon terminals can display full-color photographs.

Low-cost equipment:

Norpak, the first manufacturer of Telidon equipment, has predicted that mass production could lower the cost of a basic Telidon terminal to as little as \$350 by 1983. Electrohome has estimated that television sets with built-in Telidon decoders could be built for about \$100 more than a standard colour television set.

Telidon and the handicapped:

Research is underway to develop a Telidon closed-captioning system that would allow the deaf to see the words being spoken on television.

Telidon can also serve the needs of individuals whose speech is impaired because of disease, accident, stroke or other disability. Telidon holds great potential as a way for the disabled to

communicate with family, friends and teachers, as a learning aid and as a reliable information service.

Prototype terminals have shown the use of Telidon for Blissymbols, a system developed in the 1940s and now used by about 30,000 disabled persons in North America. The Bliss system is a visual code that employs symbols instead of text to convey messages. The system is used in some 26 countries. A vocabulary of about 1,500 symbols has been standardized by the Blissymbolic Communication Institute of Toronto, Ontario.

The first Bliss terminal using the Telidon Picture Description Instructions coding scheme was developed at the DOC Communications Research Centre in 1977.

Subsequent work by the National Research Council Medical Engineering Division and Norpak led to the "Blissterm", a computer terminal with a vocabulary of 517 symbols and the ability to adapt to a wide range of special input devices to accommodate the needs of individuals with different degrees and types of disability.

Stored voice and sound:

The Communications Research Centre of DOC is developing ways to store sound with graphics and text in Telidon data bases. This would allow a user to receive a voice message or music along with regular Telidon pages.

Picture Manipulation Instructions:

An extension of Telidon Picture Description Instructions called Picture Manipulation Instructions will permit future Telidon terminals to present smooth image transformations such as rotations, translations and zooms. This will enhance the quality of animated sequences.

Intelligent networks:

Telidon users may soon be able to call a central number and connect with a computer directory service that will tell them what information is available in different computers across the country. The user will be able to switch from data bank to data bank with a single phone call. This service could also maintain a personal file and mailbox system for each Telidon user. Researchers are also developing a third-party access system in which



users can call one computer and be switched to another computer if more information is required.

Terminal-to-terminal communications:

Telidon message services now work through central computers where one party can leave a message for another through an electronic mailbox system. In the future, Telidon terminals will be able to by-pass the main computer and communicate directly with one or more other terminal users, sharing text and

graphics in the same way that audio messages are now shared in a conference phone call.

Telidon and videodisc systems:

The combination of Telidon text and graphics with video images from a videodisc system is being studied by several researchers. Telidon users would be able to search through an index for textual information and graphic explanations, and by pressing a button call up moving video images of the subjects.

Enquiries may be addressed to the nearest Canadian Embassy, High Commissioner or Consulate or, in Canada, to the Telidon Program, Department of Communications, 300 Slater Street, Ottawa, Ontario K1A 0C8.

Canada

VIPS

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A versatile system for creating and managing text and graphics for videotex and related applications

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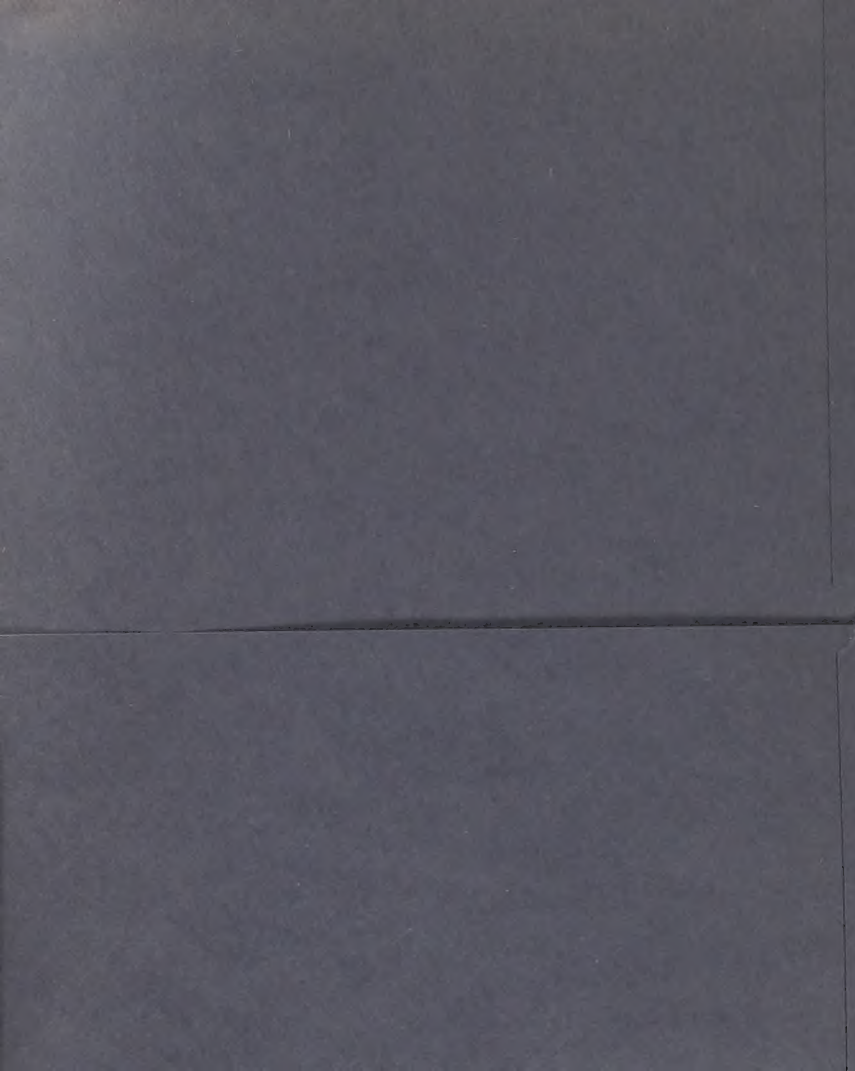


Microtel's third generation integrated terminal gives you Telidon — and more. It can be used in videotex information systems and computer graphics applications and, with the added versatility of high resolution 80 x 24 text capability, it can be used as a standard computer terminal.

The VTX 208 interprets Telidon picture description instructions (PDIs) using AT&T's Telidon plus, as defined in CRC Technical Note 709. The terminal shows the superb quality of the Telidon display with a resolution of 256 x 240 pixels, and the 80 x 24

text format with a resolution of 560 x 240 pixels.

The terminal comes equipped with a full ASCII keyboard. For further information contact AEL Microtel Limited, Business Information Systems, #205-4664 Lougheed Highway, Burnaby, B.C. V5C 5T5. Telephone (604) 294-8321.



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